2013 Annual Water Quality Report

(Consumer Confidence Report)

RAF Lakenheath, UK

Introduction

Air Force Instruction 48-144, *Safe Drinking Water Surveillance Program*, and the United States Environmental Protection Agency (US EPA) require all community water systems to provide their consumers an annual water quality report. This report will help you understand where your drinking water comes from and what is in it. It will also help you to make informed choices that affect your families' health and help you understand the importance of protecting our drinking water sources.

Source Water

The 48th Civil Engineer Squadron (CES) operates RAF Lakenheath's potable water distribution system. Water comes from three boreholes (wells) that are recharged from groundwater obtained from the Chalk aquifer. Additionally, RAF Lakenheath purchases water from the local supplier, Anglian Water that supplements the base water supply and is used as needed.

Treatment Process

RAF Lakenheath's water supply is chlorinated using a sodium hypochlorite solution. Chlorine is added to the water supply for disinfection purposes and prevents bacteriological growth in the distribution system. Additionally, water may run through a de-nitrification plant to control the level of nitrates. Finally, fluoride is added to the water supply to prevent tooth decay in children.

Testing

Bioenvironmental Engineering (BE) technicians collect bacteriological samples from various locations in the water distribution system. These samples are analyzed in the BE water lab to ensure no bacteriological growth is present in the distribution system. Additionally, BE technicians collect water samples for chemical and radiological analysis, as well as further bacteriological testing from representative locations in the water system. They are sent to Northumbrian Water Laboratory (NWL) for analysis. NWL is headquartered in Newcastle Upon Tyne, England. They have laboratories throughout England, but primarily analyze drinking water at their Horsley Laboratory in Newcastle. Additionally, since NWL is not capable of testing all pesticides from the US EPA and Final Governing Standards for the United Kingdom (FGS-UK) requirements with detection limits, several water samples are sent to the US Army Public Health Command US Laboratory in Germany. All lab results are reviewed and maintained by the BE Flight at RAF Lakenheath to ensure compliance with both US and UK safe drinking water standards.

Water Analysis Results

RAF Lakenheath's water supply is tested for over 100 different substances. The table on the reverse side lists the contaminants detected that require reporting by the US EPA and the March 2013 US Department of Defense Environmental FGS-UK.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. **The presence of contaminants does not necessarily indicate that water poses a health risk.** More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791 or going to their ground and drinking water website at http://www.epa.gov/safewater.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity. The table of analysis results on the reverse side lists possible generic sources for some detected contaminants; an identification of a possible source is not specific to RAF Lakenheath, but applies to all water in general.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems and wildlife;
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm runoff and industrial or domestic wastewater discharges;
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential use;
- Organic chemical contaminants, including synthetic or volatile organic chemicals, which are by-products of industrial processes and can come from gas stations, urban storm water runoff and septic systems;
- Radioactive contaminants, which can be naturally occurring or be the result of industrial activities.

In order to ensure that tap water is safe to drink, limits are established on the amount of certain contaminants in water provided by public water systems. The limits below are from the FGS-UK. This document integrates US and UK requirements by implementing the more stringent limit of any chemical regulated by either country.

Results Discussion

The results in the table on the reverse side include all chemicals covered by the US EPA's Safe Drinking Water Act for which analysis was performed and concentrations of the chemicals that were detected from 1 January 2013 to 31 December 2013. Although lead is reported as exceeding the maximum contaminant limit during the 2013 sampling year, RAF Lakenheath received zero reportable exceedances as actions are triggered if the respective lead and copper levels are exceeded in more than 10% of all sampled taps; this did not occur at RAF Lakenheath.

The tap water at RAF Lakenheath is safe and healthy.

Additional Health Information

Nitrate in drinking water at levels above 10 mg/L is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, seek advice from your health care provider.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We strive to provide high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. More information is available from the Safe Drinking Water Hotline (800) 426-4791 or at http://www.epa.gov/safewater/lead.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, those with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections.

These people should seek advice about drinking water from their health care providers. The EPA and Center for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline or on the US EPA's website, http://www.epa.gov.

Input and Information

This report is available online at the following: http://www.lakenheath.af.mil/. Copies can be requested via mail by sending a self-addressed stamped envelope to:

48 AMDS/SGPB
ATTN: 2013 Water Quality Report
Unit 5115
APO, AE 09461

For more information please contact TSgt Hernandez at the 48th Aerospace Medicine Squadron, Bioenvironmental Engineering Flight (01638-528047).

Table of Detected Contaminants

Microbial	**Units**	**Range**	**MCL**	**Possible Source**
Total Coliform	# pos	0 positive	>1 per month	Natural bacteria present in the environment
Organic				
Total Trihalo-methanes	mg/L	0.0176	0.08	By-product of drinking water disinfection
Total Organic Carbon	mg/L	0.93-1.4	No Abnormal Changes	Human and animal fecal waste; Previous data shows no abnormal trend nor significant increase in the last 3 years
Inorganics				
Antimony	mg/L	0.000054-0.000099	0.005	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	mg/L	0.00028-0.00037	0.01	Erosion of natural deposits; runoff from orchards, runoff from glass & electronics production wastes
Boron	mg/L	0.021-0.1	1	Released from rocks and soils through weathering
Bromate	mg/L	0.00045-0.00099	0.01	By-product of drinking water disinfection
Cadmium	mg/L	0.0.0000035 - 0.000011	0.005	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium	mg/L	0.000054 - 0.00017	0.05	Discharge from steel and pulp mills; erosion of natural deposits
Conductivity	µS/cm at 20ºC	630	2500	Some conductivity is expected in drinking water
Cyanide	mg/L	0.00044-0.0029	0.05	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories
Lead	mg/L	0.00029 - 0.041	0.015	Corrosion of household plumbing systems; erosion of natural deposits
Mercury	mg/L	0.000014-0.000045	0.001	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Nickel	mg/L	0.00046–0.0023	0.02	Corrosion of plumbing system
Nitrate (as N)	mg/L	3.8 – 10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (as N)	mg/L	0.0022	0.15	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium	mg/L	0.00022—0.00045	0.01	Discharge from petroleum and metal refineries; Erosion of natural deposits; discharge from mines
Sodium	mg/L	11-14	200	Stems from rocks and soils and naturally ends up in water systems
Total Pesticides	mg/L	0.000007-0.0000204	0.0005	

Table of Detected Contaminants

Radionuclide	**Units**	**Range**	**MCL**	**Possible Source**
Gross Alpha	Bq/L	0.017 – 0.02	0.555	Erosion of natural deposits
Gross Beta	Bq/L	0.031—0.10	1.85	Erosion of natural deposits

Secondary Standard Contaminants*

Inorganic	**Units**	**Range**	**MCL**	**Possible Source**
Chloride	mg/L	23-29	250	
Color	mg/L	1.1	20	
Copper	mg/L	0.024-1.3	2.0	Corrosion of plumbing system
Fluoride	mg/L	0.13-0.91	1.5	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Iron	mg/L	0.0012 -0.0018	0.2	
Manganese	mg/L	0.00034 - 0.0074	0.05	
Odor		No Abnormal Change		Acceptable to Customers
pH (Hydrogen Ion)	pH	7.9	6.5 –9.5	Drinking water is expected to have a fairly neutral pH amount (5.5-9.5)
Sulfate	mg/L	20-22	250	
Taste		No Abnormal Change		Acceptable to Customers
Turbidity	NTU	0.080-0.15	1	Soil Runoff; Measure of water clarity, not health related

*National Secondary Drinking Water Regulations (NSDWRs) or Secondary standards are non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water.

Definitions:
FGS-UK: Final Governing Standards for the United Kingdom - The governing environmental regulation for US military bases in the UK.
MCL: Maximum Contaminant Level, or the highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.
Range: Shows the lowest and highest levels found during a testing period, if only one sample was taken, then t this number equals the level found.
NTU: Nephelolometric Turbidity Units. A unit used to describe the clarity of water. Higher numbers relates to more cloudy water.
Total Trihalomethanes: The sum of the detected concentrations of chloroform, bromoform, dibromochloromethane, and bromodichloromethane in mg/L.
Abbreviations:
ºC: degrees in Celsius, **mg/L -** milligrams per liters, **µS/cm** - microsiemens per centimeter, **Bq/L** - Becquerels per liter, **pH** - potential hydrogen, **NTU-** Nephelometric Turbidity Unit